

# **Mortality among people who use illicit drugs: A toolkit for classifying major causes of death**

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## Overview

- Some people who use illicit drugs, particularly people who inject drugs and people who are dependent upon drugs such as cocaine, amphetamines and opioids, are at elevated risk of mortality. These elevated risks tend to be concentrated across a few key domains. Some of those are related to the manner in which drugs are taken (e.g. contraction of blood borne viral infections such as HIV through sharing of injection equipment); others may be related to the effects of drug and alcohol use (e.g. liver disease) and others still as relatively direct consequences of acute drug intoxication (e.g. accidental drug overdose).
- Classifying deaths into appropriate categories is not a straightforward task. Multiple iterations of the World Health Organization's (WHO) International Classification of Diseases exist, each of which defines deaths slightly differently. Some codes are not readily interpretable as belonging to a distinct grouping. Hundreds of codes exist, so the volume of categories may present challenges.
- This bulletin provides an overview of some key references that provide guidance on classifying major causes of death that occur among people who use illicit drugs. It is intended to make categorization of deaths among illicit drug users an easier process, and perhaps one that is undertaken more consistently across studies.
- It provides groupings for both the International Classification of Diseases Version 9 (ICD-9) and Version 10 (ICD-10). The comparable codes in each are listed alongside each other. There may be differences in the deaths captured due to the version change, and this should be noted when analysing data across time.
- The source of each of these groupings is provided alongside each for ease of reference.
- Feedback on these groupings or suggestions for further groupings are welcomed.

**Note 31st July 2018: an error was noted in the grouping for accidental injuries below (violent deaths were incorrectly repeated under accidental injuries). This report is the corrected version.**

## Definitions for major causes of death

	ICD9	ICD10	Source
Drug-induced deaths	304, 305.2-305.9, E850-E858, E950.0-E950.5, E962.0, E980.0-E980.5	F11- F16, F19, F55, X40-X44, X60-X64, X85, Y10-Y14	ABS definitions of drug induced deaths ( <a href="http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3321.0.55.001Explanatory%20Notes11991-2001?OpenDocument">http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3321.0.55.001Explanatory%20Notes11991-2001?OpenDocument</a> )
Accidental drug-induced deaths	304, E850-E858	F11-F16, F19, F55, X40-X44	ICD10 codes from: Barker B and Degenhardt L. Accidental drug-induced deaths in Australia 1997-2001. NDARC Technical Report No. 163. Sydney, National Drug and Alcohol Research Centre, University of New South Wales.
Accidental opioid deaths	304.0, 304.7, E850.0-E850.2	F11 F19 & F11 X42 & T40.0-T40.4 or T40.6 X44 & T40.0-T40.4 or T40.6 F19 & T40.0-T40.4 or T40.6	Barker B and Degenhardt L. Accidental drug-induced deaths in Australia 1997-2001. NDARC Technical Report No. 163. Sydney, National Drug and Alcohol Research Centre, University of New South Wales. Added E850.2 in the ICD9 definition – Accidental poisoning by other opiates and related narcotics.
All injury and poisoning	E800-E869, E880-E929, E950-E999	V00-X99, Y00-Y39, Y85-Y87, Y89	CHO injury and poisoning indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Suicide	E950-E959	X60- X84, Y87.0	CHO suicide indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Motor vehicle and transport accidents	E810-E825, E929.0	V01-V04, V06, V09-V80, V81.0, V81.1, V82.0, V82.1, V83, V84-V86, V87, V88.0-V88.5, V88.7-V88.8, V89, V99, Y85	CHO motor vehicle crash injury indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> ) and CHO unintentional injuries indicators ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> )
Violence	E960-E969	X85-Y09, Y87.1	CHO violence indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> )

	ICD9	ICD10	Source
Unintentional injuries: Motor vehicle and transport accidents	E810-E825, E929.0	V01-V04, V06, V09-V80, V81.0, V81.1, V82.0, V82.1, V83, V84-V86, V87, V88.0-V88.5, V88.7-V88.8, V89, V99, Y85	CHO unintentional injuries indicators ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> ) and CHO motor vehicle crash injury indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Accidental poisonings:	E850-E869	X40-X49	
Falls:	E880-E886, E888	W00-W19	
Fires/burns:	E890-E899	X00-X09	
Drownings:	E910	W65-W74	
Cardiovascular disease	390-459	I00-I99, G45, G46	CHO cardiovascular disease indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
All liver related	070, 155, 570, 571.0-571.9, 572-573	B15-B19, B94.2, C22, K70-K77, O98.4, P35.3	Amin J, Law M, Bartlett M, Kaldor J, Dore G. Causes of death after diagnosis of hepatitis B or hepatitis C infection: a large community-based linkage study. Lancet 2006; 368: 938-45. Added obstetric and neonatal hepatitis codes from CHO viral hepatitis indicator.
Viral hepatitis	070	B15-B19, B94.2, O98.4, P35.3	CHO potentially avoidable mortality table ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> ) and diagnosis table ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )

	ICD9	ICD10	Source
Chronic liver disease or cirrhosis	571	K70, K73-K74	Anderson RN, Miniño AM, Hoyert DL, Rosenberg HM. Comparability of cause of death between ICD-9 and ICD-10: Preliminary estimates. National vital statistics reports; vol 49 no. 2. Hyattsville, Maryland: National Center for Health Statistics. 2001. ( <a href="http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_02.pdf">http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_02.pdf</a> )
Alcoholic liver disease	571.0-571.3	K70	Amin J, Law M, Bartlett M, Kaldor J, Dore G. Causes of death after diagnosis of hepatitis B or hepatitis C infection: a large community-based linkage study. Lancet 2006; 368: 938-45.
Non-alcoholic liver disease	570, 571.4-571.9, 572-573	K71-K77	Amin J, Law M, Bartlett M, Kaldor J, Dore G. Causes of death after diagnosis of hepatitis B or hepatitis C infection: a large community-based linkage study. Lancet 2006; 368: 938-45.
All alcohol-related	291, 303.0, 303.9, 305.0, 357.5, 425.5, 535.3, 571.0-571.3, E860.0-E860.2	E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K86.0, R78.0, X45, X65, Y15	ABS alcohol-induced deaths indicator in 3303.0 - Causes of Death, Australia, 2006 ( <a href="http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3303.0Appendix32006?opendocument&amp;tabname=Notes&amp;prodno=3303.0&amp;issue=2006&amp;num=&amp;view=">http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3303.0Appendix32006?opendocument&amp;tabname=Notes&amp;prodno=3303.0&amp;issue=2006&amp;num=&amp;view=</a> ) ICD9 translation assisted by Chikritzhs et al 2002 'Alcohol-related codes: Mapping ICD-9 to ICD-10' Technical Report from NDRI and Dept of Health, Western Australia ( <a href="http://espace.lis.curtin.edu.au/archive/00000406/01/T128_ICD9-ICD10.pdf">http://espace.lis.curtin.edu.au/archive/00000406/01/T128_ICD9-ICD10.pdf</a> )
Cancer	140-208	C00-C97	CHO indicator for cancer ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
HIV-related	042-044, 279.10	B20-B24	ABS definition in 3303.0 - Causes of Death, Australia, 2006, explanatory notes point 42 ( <a href="http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3303.0Explanatory%20Notes12006?OpenDocument">http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3303.0Explanatory%20Notes12006?OpenDocument</a> )
Diabetes	250, 648.0, 648.8	E10-E14, O24	CHO diabetes indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )

	ICD9	ICD10	Source
Chronic respiratory disease	491, 492, 493, 496	J41-J46	CHO chronic respiratory disease indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Epilepsy	345	G40-G41	CHO potentially avoidable mortality table ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> )
Digestive disorders (including chronic liver disease)	531-534, 540-543, 550-553, 571.4-571.9, 574-577	K25-K28, K35-K38, K40-K46, K73, K74, K80-K83, K85-K86, K91.5	CHO potentially avoidable mortality table ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_avm.htm</a> )
Influenza and pneumonia	480-487	J10-J18	CHO indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )

	ICD9	ICD10	Source
Suggested groupings for specific cancers			
Lung	162	C33-C34	CHO lung cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Skin	172-173	C43-C44	Malignant melanoma and other malignant neoplasm of skin indicators in ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> )
Liver	155	C22	ICD-10 code from CHO liver cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> ) and Amin et al. (2006) ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> )
Colorectal	153-154	C18-C21	CHO colorectal cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Leukemia	204-208	C91-C95	ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> )
Pancreas	157	C25	ICD-10 code from CHO pancreatic cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> ) ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> )
Non-Hodgkin lymphoma	200, 202	C82-C85	ICD-10 code from CHO NHL indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> ) ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> )
Breast	174	C50	CHO breast cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )

	ICD9	ICD10	Source
Cervical	180	C53	CHO cervical cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> )
Kidney	189.0-189.2	C64-C66, C68	ICD10 codes from CHO kidney cancer indicator ( <a href="http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm">http://www.health.nsw.gov.au/public-health/chorep/toc/app_icd_diag.htm</a> ) ICD-9 and ICD-10 cause of death comparison report for Alberta Health and Wellness, Canada ( <a href="http://www.health.alberta.ca/resources/publications/ICD_series2.pdf">http://www.health.alberta.ca/resources/publications/ICD_series2.pdf</a> ) with the addition of 189.2 in ICD9 to match ICD10 definition
Anogenital	154.2-154.3, 154.8, 180, 184, 187.1-187.4, 187.7-187.9,	C21, C51-C53, C57, C60, C63	ICD-9-CM codebook (The Australian Version of the International Classification of Diseases, 9 <sup>th</sup> Revision, Clinical Modification, effective 1 July 1996) 154.2: Anal canal 154.3: Anus unspecified 154.8: Other 180: Cervix uteri 184: Other and unspecified female genital organs 187.1: Prepuce 187.2: Glans penis 187.3: Body of penis 187.4: Penis, part unspecified 187.7: Scrotum 187.8: Other specified sites of male genital organs 187.9: Male genital organ, site unspecified ICD-10-AM codebook (The International Statistical Classification of Diseases and Related Health Problems, 10 <sup>th</sup> Revision, Australian Modification, First Ed 1 July 1998) C21: Anus and anal canal C51: Vulva C52: Vagina C53: Cervix uteri C57: Other and unspecified female genital organs C60: Penis C63: Other and unspecified male genital organs



	ICD9	ICD10	Source
Oropharyngeal	141,143- 146,148,149	C01-C06, C09- C10, C12-C14	In Chikritzhs et al 2002 Alcohol-related codes: Mapping ICD-9 to ICD-10” Technical Report from NDRI and Dept of Health, Western Australia ( <a href="http://espace.lis.curtin.edu.au/archive/00000406/01/T128_ICD9-ICD10.pdf">http://espace.lis.curtin.edu.au/archive/00000406/01/T128_ICD9-ICD10.pdf</a> )
Kaposi’s sarcoma	176	C46	ICD-9-CM and ICD-10-AM codebooks